

### **Remarks**

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and the following remarks. Claims 1, 3, 4, 7-15, 18 and 20-26 are pending in the application. No claims have been allowed. Claims 1, 7, and 15 are independent. Previously, claims 2, 5, 6, 16-17 and claim 19 were canceled without prejudice.

### **Claim Interpretation**

The Office alleges that “Patentable weight is not give to the programs enumerated in claim 7 as 1) they are “operationally able”, but do not necessarily perform [the] function (see MPEP 2111.04), and 2) because they are drawn to non-descriptive matter per se. [Action, page 2.] Applicants respectfully disagree and traverse.

#### **Objection 1)**

The Office alleges that “Patentable weight is not give to the programs enumerated in claim 7 as they are “operationally able”, but do not necessarily perform [the] function (see MPEP 2111.04).” [Action, page 2, para. 7.] MPEP 2111.04, cited by the office to object to claim 7 explicitly does not give weight to one type of clause; a “whereby clause in a method claim are not given weight when it simply expresses the intended result of a process step positively recited.” The clauses objected to in claim 7 are in a system claim (“A computer system comprising....”) and so is not in a method claim. Thus, the scope limiting as defined in the MPEP does not apply to it.

Moreover, when a “whereby” clause states a condition that is material to patentability, it cannot be ignored in order to change the substance of the invention.” [MPEP 2111.04.] The “operationally able” clauses in claim 7 state a condition that is material to patentability, and as such, cannot be ignored in order to change the substance of the invention. Nonetheless, to further examination, the phrase “operationally able to” has been amended to read “operating to.” For at least these reasons, Applicants request that objection 1 to claim 7 be removed.

#### **Objection 2)**

The Office alleges that Patentable weight is not give to the programs enumerated in claim 7 “because they are drawn to non-descriptive matter per se.” [Action, page 2, para. 8.]

Applicants respectfully disagree. The claim is an apparatus claim with process steps, as is allowable. In support, the MPEP states:

For example, a claimed invention may be a combination of devices that appear to be directed to a machine and one or more steps of the functions performed by the machine. Such instances of mixed attributes, although potentially confusing as to which category of patentable subject matter the claim belongs, does not affect the analysis to be performed by USPTO personnel. **Note that an apparatus claim with process steps is not classified as a "hybrid" claim; instead, it is simply an apparatus claim including functional limitations.** See, e.g., *R.A.C.C. Indus. v. Stun, -Tech, Inc.*, 178 F.3d 1309 (Fed. Cir. 1998) (unpublished). [MPEP 2106.IV.B, emphasis added.]

Further, the MPEP describes the process steps in an apparatus claim as “functional limitations.” As such, they are not non-descriptive subject matter, rather they are “functional limitations.” Moreover, for argument only, even if the disputed clauses of claim 7 are descriptive material, such material is non-patentable only when “claimed as descriptive material *per se*.” [MPEP 2106.01.] The disputed clauses are claimed as functional limitations of an apparatus, and therefore are most certainly **not** “claimed as descriptive material *per se*,” and as such should be given patentable weight. For at least the reasons given above, Applicants respectfully request that the objection to claim 7 be removed.

### **Claim Objections**

The Action objects to Claim 1 as lacking antecedent basis. Claim 22 is objected to as having an improper dependent claim. The amendments to Claim 1 render this objection moot. Claim 22 has been amended to overcome this objection.

### **35 U.S.C. § 103 Rejections**

The Office action rejects claims 1, 3, and 4 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,659,555 to Lee (Lee) and further in view of U.S. Patent No. 5,630,051 to Sun (Sun), in further view of U.S. Patent No. 7,290,193 to Kadkade (Kadkade).

### **Claim 1.**

A core element in amended claim 1, of “splitting the continuous cycle into discrete sequences that end at the non-deterministic states” is not taught by any of the asserted references.

The Action at page 5 concedes that neither the primary reference to Lee nor the secondary reference to Sun discloses splitting a continuous cycle into discrete sequences. Nonetheless, the action contends that Kranzlmuller so discloses, and that

Kranzlmuller however discloses the missing limitation of splitting (p. 490 section 1 “A traditional approach to error detection is cyclic debugging. [...] f is split into subfunctions  $f_1, f_2, \dots f_n$ , and repeated executions of f are used to determine the correct states between these subfunctions by analyzing intermediate results.”. [Action, page 5.]

At best, the Action concedes that Kranzlmuller discloses “splitting,” [Action, page 5, emphasis added] not a specific sort of splitting, such as splitting “a cycle,” let alone splitting a specific sort of cycle, a *continuous* cycle. Specifically, Kranzlmuller describes splitting a function into subfunctions “and repeated executions of f are used to determine the correct states between these subfunctions by analyzing intermediate results.” [Kranzlmuller, p. 490.] That is, Kranzlmuller describes splitting *functions* into *subfunctions* NOT splitting a *continuous cycle* into *discrete sequences*, let alone the additional features “splitting the continuous cycle into discrete sequences that end at the non-deterministic states.” Thus, the Office concedes that Kranzlmuller does not provide a disclosure that remedies the aforementioned, conceded deficiency in the primary citation to Lee or the secondary citation to Sun.

Further Kranzlmuller directly teaches away from the above-quoted claim language. Kranzlmuller states “In sequential programs this [the function splitting and repeated executions] can be achieved with breakpoints and single-stepping under control of a debugger. Of course, the input has to be the same and all interactions with the external environment must be reproduced.” [Kranzlmuller, p. 490.] This directly and clearly teaches against any use of non-deterministic states using Kranzlmuller as such non-deterministic states are not reproducible at will.

For these reasons, at least, claim 1 should be allowed. Such action is respectfully requested.

## Claims 2-6.

Claims 2-6 ultimately depend on claim 1. Thus, at least for the reasons set forth above with respect to claim 1, claims 2-6 should also be in condition for allowance. These claims also set forth independently patentable combinations of method acts.

The Office action rejects claims 7-15, 18, 20, and 24-26 under 35 U.S.C. 103(a) as being unpatentable over Lee, further in view of Sun, in further view of Kadkade, and further in view of Kranzlmuller's "NOPE: A Nondeterministic Program Evaluator" (Kranzlmuller).

**Claim 7.**

A core element in claim 7, of "a graphing program operating to ...split the continuous cycle into discrete sequences that end at non-deterministic states...." is not taught by any of the asserted references.

The Action at page 5 concedes that neither the primary reference to Lee nor the secondary reference to Sun discloses the above-quoted language of claim 7. Nonetheless, the Action contends that Kranzlmuller so discloses, and that:

Kranzlmuller however discloses the missing limitation of splitting (p. 490 section 1 "A traditional approach to error detection is cyclic debugging. [...] f is split into subfunctions  $f_1, f_2, \dots, f_n$ , and repeated executions of f are used to determine the correct states between these subfunctions by analyzing intermediate results.". [Action, page 5.]

At best, the Action concedes that Kranzlmuller discloses "splitting," [Action, page 5, emphasis added] not a specific sort of splitting, such as splitting "a cycle," nor a specific sort of cycle, a "continuous cycle," let alone splitting any sort of cycle a specific way, such as into "discrete sequences." Specifically, Kranzlmuller describes splitting a function into subfunctions "and repeated executions of f are used to determine the correct states between these subfunctions by analyzing intermediate results." [Kranzlmuller, p. 490.] That is, Kranzlmuller describes splitting *functions* into *subfunctions* NOT splitting *a continuous cycle* into *discrete sequences*, let alone the additional features "split[ting] the continuous cycle into discrete sequences that end at non-deterministic states. Thus, the Office concedes that Kranzlmuller does not provide a disclosure that remedies the aforementioned, conceded deficiency in the primary citation to Lee or the secondary citation to Sun.

Further Kranzlmuller directly teaches away from the above-quoted claim language. Kranzlmuller states "In sequential programs this [the function splitting and repeated executions] can be achieved with breakpoints and single-stepping under control of a debugger. Of course, the input has to be the same and all interactions with the external environment must

be reproduced.” [Kranzlmuller, p. 490.] This directly and clearly teaches against any use of non-deterministic states using Kranzlmuller as such non-deterministic states are not reproducible at will.

For at least these reasons, claim 7 is in condition for allowance.

#### **Claims 8-14.**

Claims 8-14 ultimately depend on claim 7. Thus, at least for the reasons set forth above with respect to claim 7, claims 8-14 should also be in condition for allowance. These claims also set forth independently patentable combinations of method acts

#### **Claim 15.**

The Action rejects claim 15 with a general reference to claims 1 and 7, stating: “note the rejection of claims 1 and 7 above. The Instant Claim recites substantially the same limitations as the above-rejected claims and therefore is rejected under the same prior-art teachings.” [Action, page 16.] Applicants respectfully disagree. Not to belabor the point, but using the same analysis as for claims 1 and 7, it can be seen that claim 15 is in condition for allowance.

#### **Claims 18 and 20.**

Claims 18 and 20 ultimately depend on claim 15. Thus, at least for the reasons set forth above with respect to claim 15, claims 18 and 20 should also be in condition for allowance. These claims also set forth independently patentable combinations of method acts.

#### **Amendments.**

Support for the amendments can be found in the application as originally filed. In addition, support can be found at, e.g., page 2, lines 7-24; page 9, lines 6-7, Fig. 3.

#### **Request for Interview**

If any issues remain, the Examiner is formally requested to contact the undersigned attorney prior to issuance of the next Office action in order to arrange a telephonic interview. It is believed that a brief discussion of the merits of the present application may expedite prosecution.

Applicants submit the foregoing formal Amendment so that the Examiner may fully evaluate Applicants' position, thereby enabling the interview to be more focused.

This request is being submitted under MPEP § 713.01, which indicates that an interview may be arranged in advance by a written request.

### **Conclusion**

The claims should be allowable. Such action is respectfully requested.

Respectfully submitted,

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